WHAT IS CLAIMED IS

1. A composition comprising a MTB39 antigen (SEQ ID NO:12 or 14) or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex, and a MTB32A antigen (SEQ ID NO:2 or 4) or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex.

2. The composition of claim 1, comprising a MTB39 antigen (SEQ ID NO:12 or 14) or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex, and a polypeptide comprising at least 195 amino acids from the N-terminus of a MTB32A antigen (SEQ ID NO:2 or 4) from a *Mycobacterium* species of the tuberculosis complex.

3. The composition of claim 2, further comprising a polypeptide comprising at least about 132 amino acids from the C-terminus of MTB32A antigen (SEQ ID NO:2 or 4) from a *Mycobacterium* species of the tuberculosis complex.

4. The composition of claims 1, 2, or 3, wherein the antigens are covalently linked, thereby forming a fusion polypeptide.

5. The composition of claim 4, wherein the fusion polypeptide has the amino acid sequence of MTB59F (SEQ ID NO:20).

6. The composition of claim 4, wherein the fusion polypeptide has the amino acid sequence of MTB72F (SEQ ID NO:16).

7. The composition of claim 4, wherein the fusion polypeptide has the amino acid sequence of MTB72FMutSA (SEQ ID NO:18).

8. The composition of claim 6 or 7, further comprising BCG.

9. The composition of claim 6 or 7, further comprising at least one additional antigen from a *Mycobacterium* species of the tuberculosis complex, wherein the antigen is selected from the group consisting of MTB8.4 antigen (SEQ ID NO:22), MTB9.8 antigen (SEQ ID NO:24), MTB9.9 antigen (SEQ ID NO:27), MTB40 antigen (SEQ ID NO:29), MTB41 antigen (SEQ ID NO:31), 38-1 (SEQ ID NO:35), TbRa3 (SEQ ID NO:37), 38 kD (SEQ ID NO:39), DPEP (SEQ ID NO:41), TbH4 (SEQ ID NO:43),

DPPD(SEQ ID NO:45), MTB82, Erd14, ESAT-6 antigen (SEQ ID NO:33), MTB85 complex antigen, or α-crystalline antigen, or an immunogenic fragment thereof.

10. The composition of claim 6 or 7, further comprising an adjuvant.

11. The composition of claim 4, wherein the antigens are covalently linked via a chemical linker.

12. The composition of claim 11, wherein the chemical linker is an amino acid linker.

13. The composition of claim 1, further comprising at least one additional antigen from a *Mycobacterium* species of the tuberculosis complex, wherein the antigen is selected from the group consisting ofMTB8.4 antigen (SEQ ID NO:22), MTB9.8 antigen (SEQ ID NO:24), MTB9.9 antigen (SEQ ID NO:27), MTB40 antigen (SEQ ID NO:29), MTB41 antigen (SEQ ID NO:31), 38-1 (SEQ ID NO:35), TbRa3 (SEQ ID NO:37), 38 kD (SEQ ID NO:39), DPEP (SEQ ID NO:41), TbH4 (SEQ ID NO:43), DPPD(SEQ ID NO:45), MTB82, Erd14, ESAT-6 antigen (SEQ ID NO:33), MTB85 complex antigen, or α-crystalline antigen, or an immunogenic fragment thereof.

14. The composition of claim 1, further comprising an adjuvant.

15. The composition of claim 14, wherein the adjuvant comprises QS21 and MPL.

16. The composition of claim 14, wherein the adjuvant is selected from the group consisting of AS2, ENHANZYN, MPL, 3D-MPL, IFA, QS21, CWS, TDM, AGP, CPG, Leif, saponin, and saponin mimetics.

17. The composition of claim 1, further comprising BCG or pVac.

18. The composition of claim 1, further comprising an NS1 antigen or an immunogenic fragment thereof.

19. The composition of claim 1, wherein the *Mycobacterium* species is *Mycobacterium tuberculosis*.

20. An expression cassette comprising a nucleic acid encoding a MTB39 antigen (SEQ ID NO:12 or 14) or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex, and a nucleic acid encoding a MTB32A antigen (SEQ ID NO:2 or 4) or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex.

21. The expression cassette of claim 20, comprising a nucleic acid encoding a MTB39 antigen (SEQ ID NO:12 or 14) or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex, and a nucleic acid encoding a polypeptide comprising at least 195 amino acids from the N-terminus of a MTB32A antigen (SEQ ID NO: 2 or 4) from a *Mycobacterium* species of the tuberculosis complex.

22. The expression cassette of claim 21, further comprising a nucleic acid encoding a polypeptide comprising at least 132 amino acids of the C-terminus of a MTB32A antigen (SEQ ID NO:2 or 4) from a *Mycobacterium* species of the tuberculosis complex.

23. The expression cassette of claim 20, wherein the nucleic acid encodes a fusion polypeptide comprising a MTB39 antigen (SEQ ID NO:12 or 14) or an immunogenic fragment thereof and a nucleic acid encoding a MTB32A antigen (SEQ ID NO:2 or 4) or an immunogenic fragment thereof.

24. The expression cassette of claim 23, wherein the nucleic acid encodes a fusion polypeptide comprising a MTB39 antigen (SEQ ID NO:12 or 14) or an immunogenic fragment thereof, and a polypeptide comprising at least 195 amino acids from the N-terminus of a MTB32A antigen (SEQ ID NO:2 or 4).

25. The expression cassette of claim 24, wherein the fusion polypeptide further comprises a polypeptide comprising at least 132 amino acids of the C-terminus of a MTB32A antigen (SEQ ID NO:2 or 4).

26. The expression cassette of claim 24, wherein the nucleic acid encodes a fusion polypeptide having the amino acid sequence of MTB59F (SEQ ID NO:20).

27. The expression cassette of claim 26, wherein the nucleic acid has the sequence of the nucleic acid encoding MTB59F (SEQ ID NO:19).

28. The expression cassette of claim 25, wherein the nucleic acid encodes a fusion polypeptide having the amino acid sequence of MTB72F (SEQ ID NO:16).

29. The expression cassette of claim 28, wherein the nucleic acid has the sequence of the nucleic acid encoding MTB72F (SEQ ID NO:15).

30. The expression cassette of claim 28, wherein the nucleic acid has the sequence of the nucleic acid encoding MTB72FMutSA (SEQ ID NO:18).

31. The expression cassette of claim 29or 30, further comprising a nucleic acid encoding at least one additional antigen from a *Mycobacterium* species of the tuberculosis complex, wherein the antigen is selected from the group consisting ofMTB8.4 antigen (SEQ ID NO:22), MTB9.8 antigen (SEQ ID NO:24), MTB9.9 antigen (SEQ ID NO:27), MTB40 antigen (SEQ ID NO:29), MTB41 antigen (SEQ ID NO:31), 38-1 (SEQ ID NO:35), TbRa3 (SEQ ID NO:37), 38 kD (SEQ ID NO:39), DPEP (SEQ ID NO:41), TbH4 (SEQ ID NO:43), DPPD(SEQ ID NO:45), MTB82, Erd14, ESAT-6 antigen (SEQ ID NO:33), MTB85 complex antigen, or α-crystalline antigen, or an immunogenic fragment thereof.

32. The expression cassette of claim 20, further comprising a nucleic acid encoding at least one additional antigen from a *Mycobacterium* species of the tuberculosis complex, wherein the antigen is selected from the group consisting ofMTB8.4 antigen (SEQ ID NO:22), MTB9.8 antigen (SEQ ID NO:24), MTB9.9 antigen (SEQ ID NO:27), MTB40 antigen (SEQ ID NO:29), MTB41 antigen (SEQ ID NO:31), 38-1 (SEQ ID NO:35), TbRa3 (SEQ ID NO:37), 38 kD (SEQ ID NO:39), DPEP (SEQ ID NO:41), TbH4 (SEQ ID NO:43), DPPD(SEQ ID NO:45), MTB82, Erd14, ESAT-6 antigen (SEQ ID NO:33), MTB85 complex antigen, or α-crystalline antigen, or an immunogenic fragment thereof.

33. The expression cassette of claim 20, further comprising a nucleic acid encoding an NS1 antigen.

34. The expression cassette of claim 20, wherein the *Mycobacterium* species is *Mycobacterium tuberculosis*.

35. A method for eliciting an immune response in a mammal, the method comprising the step of administering to the mammal an immunologically effective amount of a pharmaceutical composition comprising a MTB39 antigen (SEQ ID NO:12 or 14) or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex, and a MTB32A antigen (SEQ ID NO:2 or 4) or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex.

36. The method of claim 35, wherein the mammal has been immunized with BCG.

37. The method of claim 35, wherein the mammal is a human.

38. The method of claim 35, wherein the composition is administered prophylactically.

39. The method of claim 35, comprising a MTB39 antigen (SEQ ID NO:12 or 14) or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex, and a polypeptide comprising at least 195 amino acids from the N-terminus of a MTB32A antigen (SEQ ID NO:2 or 4) from a *Mycobacterium* species of the tuberculosis complex.

40. The method of claim 39, further comprising a polypeptide comprising at least about 132 amino acids from the C-terminus of MTB32A antigen (SEQ ID NO: 2 or 4) from a *Mycobacterium* species of the tuberculosis complex.

41. The method of claim 35 or 39, wherein the antigens are covalently linked, thereby forming a fusion protein.

42. The method of claim 41, wherein the fusion polypeptide has the amino acid sequence of MTB59F (SEQ ID NO:20).

43. The method of claim 40, wherein the antigens are covalently linked, thereby forming a fusion protein.

44. The method of claim 43, wherein the fusion polypeptide has the amino acid sequence of MTB72F (SEQ ID NO:16).

45. The method of claim 43, wherein the fusion polypeptide has the amino acid sequence of MTB72FMutSA (SEQ ID NO:18).

46. The method of claim 35, wherein the pharmaceutical composition further comprises an adjuvant.

47. The method of claim 46, wherein the adjuvant comprises QS21 and MPL.

48. The method of claim 46, wherein the adjuvant is selected from the group consisting of AS2, ENHANZYN, MPL, 3D-MPL, IFA, QS21, CWS, TDM, AGP, CPG, Leif, saponin, and saponin mimetics.

49. A method for eliciting an immune response in a mammal, the method comprising the step of administering to the mammal an immunologically effective amount of an expression cassette comprising a nucleic acid encoding a MTB39 antigen (SEQ ID NO:12 or 14) or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex, and a nucleic acid encoding a MTB32A antigen (SEQ ID NO:2 or 4) or an immunogenic fragment thereof from a *Mycobacterium* species of the tuberculosis complex.

50. The method of claim 49, wherein the mammal has been immunized with BCG.

51. The method of claim 49, wherein the mammal is a human.

52. The method of claim 49, wherein the composition is administered prophylactically.

53. The method of claim 49, wherein the nucleic acid encodes a fusion polypeptide comprising a MTB39 antigen (SEQ ID NO:12 or 14) or an immunogenic fragment thereof, and a polypeptide comprising at least 195 amino acids from the N-terminus of a MTB32A antigen (SEQ ID NO:2 or 4) .

54. The method of claim 53, further comprising a nucleic acid encoding a polypeptide comprising at least 132 amino acids of the C-terminus of a MTB32A antigen (SEQ ID NO:2 or 4) from a *Mycobacterium* species of the tuberculosis complex.

55. The method of claim 49, wherein the nucleic acid encodes a fusion polypeptide comprising a MTB39 antigen (SEQ ID NO: 12 or 14) or an immunogenic fragment thereof and a nucleic acid encoding a MTB32A antigen (SEQ ID NO:2 or 4) or an immunogenic fragment thereof.

56. The method of claim 55, wherein the nucleic acid encodes a fusion polypeptide comprising a MTB39 antigen (SEQ ID NO:12 or 14) or an immunogenic fragment thereof, and a polypeptide comprising at least 195 amino acids from the N-terminus of a MTB32A antigen (SEQ ID NO: 2 or 4).

57. The method of claim 56, wherein the fusion polypeptide further comprises a polypeptide comprising at least 132 amino acids of the C-terminus of a MTB32A antigen (SEQ ID NO:2 or 4).

58. The method of claim 56, wherein the nucleic acid encodes a fusion polypeptide having the amino acid sequence of MTB59F (SEQ ID NO:20).

59. The method of claim 58, wherein the nucleic acid has the nucleotide sequence of the nucleic acid encoding MTB59F (SEQ IDNO:19).

60. The method of claim 57, wherein the nucleic acid encodes a fusion polypeptide having the amino acid sequence of MTB72F (SEQ ID NO:16) .

61. The method of claim 57, wherein the nucleic acid encodes a fusion polypeptide having the amino acid sequence of MTB72FMutSA (SEQ ID NO:18).

62. The method of claim 60, wherein the nucleic acid has the nucleotide sequence of the nucleic acid encoding MTB72F (SEQ IDNO:15).

63. The method of claim 60, wherein the nucleic acid has the nucleotide sequence of the nucleic acid encoding MTB72FMutSA (SEQ ID NO:17).

64. An isolated nucleic acid encoding a MTB32A antigen from a *Mycobacterium* species of the tuberculosis complex, wherein at least one amino acid in the active site triad of the MTB32A antigen (SEQ ID NO:2 or 4) has been substituted by a different amino acid.

65. The nucleic acid of claim 64, wherein an serine residue corresponding to amino acid position 183 of SEQ ID NO:4 or position 207 of SEQ ID NO:2 has been substituted by another amino acid.

66. The nucleic acid of claim 65, wherein an alanine residue has been substituted for the serine residue.

67. The nucleic acid of claim 66, wherein the nucleic acid comprises a nucleotide sequence of SEQ ID NO:5.

68. A composition comprising the nucleic acid of claim 64.

69. A nucleic acid encoding a fusion polypeptide comprising the nucleic acid of claim 64.

70. An isolated MTB32A polypeptide from a *Mycobacterium* species of the tuberculosis complex, wherein at least one amino acid in the active site triad of the MTB32A antigen (SEQ ID NO:2 or 4) has been substituted by a different amino acid.

71. The polypeptide of claim 70, wherein a serine residue corresponding to amino acid position 183 of SEQ ID NO:4 or amino acid position 207 of SEQ ID NO:2 has been substituted by another amino acid.

72. The polypeptide of claim 71, wherein an alanine residue has been substituted for the serine residue.

73. A polypeptide of claim 72, wherein the polypeptide comprises an amino acid sequence of SEQ ID NO:6.

74. A composition comprising the polypeptide of claim 70.

75. A fusion polypeptide comprising the polypeptide of claim 70.

76. An isolated nucleic acid encoding a fusion polypeptide comprising a MTB39 antigen (SEQ ID NO:12 or 14) from a *Mycobacterium* species of the tuberculosis complex, and an antigen comprising at least 195 amino acids from the N-terminus of a MTB32A antigen (SEQ ID NO:2 or 4) from a *Mycobacterium* species of the tuberculosis complex, wherein an amino acid of the active site triad of the MTB32A antigen (SEQ ID NO:2 or 4) has been substituted by a different amino acid.

77. The nucleic acid of claim 76, wherein a serine residue corresponding to amino acid at position 183 of SEQ ID NO:4 or position 207 or SEQ ID NO:2 has been substituted by another amino acid.

78. The nucleic acid of claim 77, wherein an alanine residue has been substituted for the serine residue.

79. A composition comprising the nucleic acid of claim 76.

80. A nucleic acid encoding a fusion polypeptide comprising the nucleic acid of claim 76.

81. A nucleic acid encoding a fusion polypeptide, wherein the nucleic acid comprises a nucleotide sequence of SEQ ID NO:17.

82. A nucleic acid encoding a fusion polypeptide comprising an amino acid sequence of SEQ ID NO:18.

83. An isolated polypeptide encoding a fusion polypeptide comprising a MTB39 (SEQ ID NO: 12 or 14) antigen from a *Mycobacterium* species of the tuberculosis complex, and an antigen comprising at least 195 amino acids from the N-terminus of a MTB32A antigen (SEQ ID NO:2 or 4) from a *Mycobacterium* species of the tuberculosis complex, wherein an amino acid of the active site triad of the MTB32A antigen (SEQ ID NO:2 or 4) has been substituted by a different amino acid.

84. The polypeptide of claim 83, wherein an serine residue corresponding to amino acid position 183 of SEQ ID NO:4 or amino acid position 207 of SEQ ID NO:2 has been substituted by another amino acid.

85. The polypeptide of claim 83, wherein an alanine residue has been substituted for the serine residue.

86. A composition comprising the polypeptide of claim 83.

87. A fusion polypeptide comprising the polypeptide of claim 83.

88. A fusion polypeptide comprising an amino acid sequence of SEQ ID NO:18.